

MAIPOMYIA (DIPTERA: DOLICHOPODIDAE), A NEW GENUS FROM CHILE

DANIEL J. BICKEL

Australian Museum, 6 College Street, Sydney, New South Wales 2010, Australia
(e-mail: danb@austmus.gov.au)

Abstract.—*Maipomyia Bickel* (Diptera: Dolichopodidae) is newly described from the Central Valley of Chile, and comprises two new species, *M. insolita Bickel* and *M. velata Bickel*. Although the genus shares many characters with the subfamily Medeterinae, especially a depressed posterior mesonotum, concave dorsal postcranium, and a life stance on vertical surfaces, other character states suggest it is more isolated. In particular, it has a highly reduced male postabdomen and distinct anterior preapical setae on femora II and III, characters that are not congruent with the traditional concept of the Medeterinae.

Key Words: Diptera, Dolichopodidae, Medeterinae, Chile

The Chilean Dolichopodidae are best known from the southern Valdivian forests (e.g., Van Duzee 1930, Parent 1932), while the faunas of the central Mediterranean and northern arid regions, by comparison, have been little studied. This paper describes an unusual new genus, *Maipomyia*, based on specimens collected south of Santiago, central Chile. The genus comprises two sympatric species, taken in yellow pan traps and hand-collected off adobe walls. Although *Maipomyia* shares many features with the subfamily Medeterinae, it is unusual in having the hypopygium highly reduced and almost completely enclosed by the abdomen. This contrasts markedly with the characteristic pedunculate hypopygium of most Medeterinae.

MATERIALS AND METHODS

This study is based largely on material I collected in Chile, with additional specimens from CAS. Repositories mentioned in this paper use the following abbreviations: (AMS)—Australian Museum, Sydney; (CAS)—California Academy of Sciences, San Francisco; (MEUC)—Luis E.

Peña Museo Entomológico, Universidad de Chile, Santiago, Chile; (USNM)—National Museum of Natural History, Smithsonian Institution, Washington, D.C.

The positions of features on elongate structures, such as leg segments, are given as a fractions of the total length, starting from the base. The CuAx ratio is the length of the m-cu crossvein/distal section CuA. The relative lengths of the podomeres should be regarded as representative ratios and not measurements. The ratios for each leg are indicated in the following formula and punctuation: trochanter + femur; tibia; tarsomere 1/ 2/ 3/ 4/ 5. The following abbreviations and terms are used: I, II, III: pro-, meso-, metathoracic legs; C, coxa; T, tibia; F, femur; ac, acrostichal setae; ad, anterodorsal; av, anteroventral; dc, dorsocentral setae; dv, dorsoventral; pd, posterodorsal; pv, posteroventral.

Maipomyia Bickel, new genus

Etymology.—*Maipomyia* is a combination of the word “Maipo”, from Rio Maipo, a Chilean river in whose drainage all known specimens were collected, and

“myia”, from the Greek meaning fly. The gender is feminine.

Type species.—*Maipomyia insolita* Bickel, new species.

Description.—Length approximately 2.0 mm; dorsal postcranium concave; face narrow; first flagellomere rounded; arista apical; posterior mesonotum distinctly flattened and slightly depressed; ac short biserrate, or absent; 5 or 6 dc present; 2 proepisternal setae present above coxa I; coxa III with single strong lateral seta; femora slender; FII and FIII each with strong anterior preapical seta; TII with ad seta at $\frac{1}{4}$, pd seta at $\frac{1}{5}$, and ad setae at $\frac{1}{2}$ and $\frac{3}{4}$; veins R_{2+3} and R_{4+5} closely parallel, and both ending before wing apex; vein M distinctly weaker than other veins; vein M curved beyond m-cu crossvein curved, but without *bosse alaire*; male abdominal segment 7 hidden and not forming peduncle, but with well separated bandlike tergum and rounded sternum; male sternum 8 covering left lateral foramen; hypopygium (Figs 2a, d): epandrium ovate, with left lateral foramen; hypandrium not evident, but aedeagus elongate and with lateral projections as figured; surstylus very short and reduced, with some long setae; male cercus short and rounded; oviscapt (Figs 2b, c) with tergum 8 forming sclerotised lateral bands which abut fused terga 9+10; terga 9+10 forming transverse band, divided into hemitergites, and with only short hairs, no strong setae or acanthophorites present; sternum 8 forming rounded ventral band.

Remarks.—*Maipomyia* comprises two species, *M. insolita* and *M. velata*. Although the genus shares many characters with the dolichopodid subfamily Medeterinae, especially a depressed posterior mesonotum, concave dorsal postcranium, and a characteristic life stance on vertical surfaces, other character states suggest it is more isolated. In particular, it has a highly reduced male postabdomen that is almost completely enclosed by the abdomen, and distinct anterior preapical setae on femora II and III, characters that contrast markedly

with the characteristic large pedunculate hypopygium and bare femora of most Medeterinae.

All specimens of *Maipomyia* were collected within the drainage of the Rio Maipo in the Central Valley of Chile, near the southern margin of metropolitan Santiago. Although much of the landscape has been altered by human settlement, the slopes of the upper valley near San José de Maipo are covered with a dry cactus-thorn scrub, and Parque Nacional Rio Clarillo preserves a remnant riverine woodland vegetation.

The two included species, *Maipomyia insolita* and *M. velata*, are sympatric. They were collected together at Rio Clarillo, both in yellow water traps, and off the white adobe walls of a park building. On the walls, individuals were seen to display characteristic medeterine behavior, resting with the head upwards and moving about the surface in short quick flights, up, down and laterally. Unlike *Medetera*, which rests with the upper body leaning out, *Maipomyia* aligns its body parallel to the vertical surface. The presence of *Maipomyia* on vertical walls suggests it normally occurs on tree trunks, like many other medeterines.

Maipomyia (Fig. 1) can be separated from all other Dolichopodidae by the following combination of characters: posterior mesonotum strongly flattened; femora II and III with anterior preapical seta; dorsal postcranium concave; vein M distinctly weaker than other veins and gently curved beyond crossvein m-cu; male hypopygium small, not pedunculate, and enclosed by preceding abdominal segments; upper proepisternum with two pale setae.

Maipomyia is distinctive and I have not seen the genus in other Neotropical collections. It possibly is confined to the region of Mediterranean climate in Central Chile, and is isolated from the rest of South America by the high Andes immediately to the east, arid deserts to the north, and cool temperate Valdivian rainforests to the south.

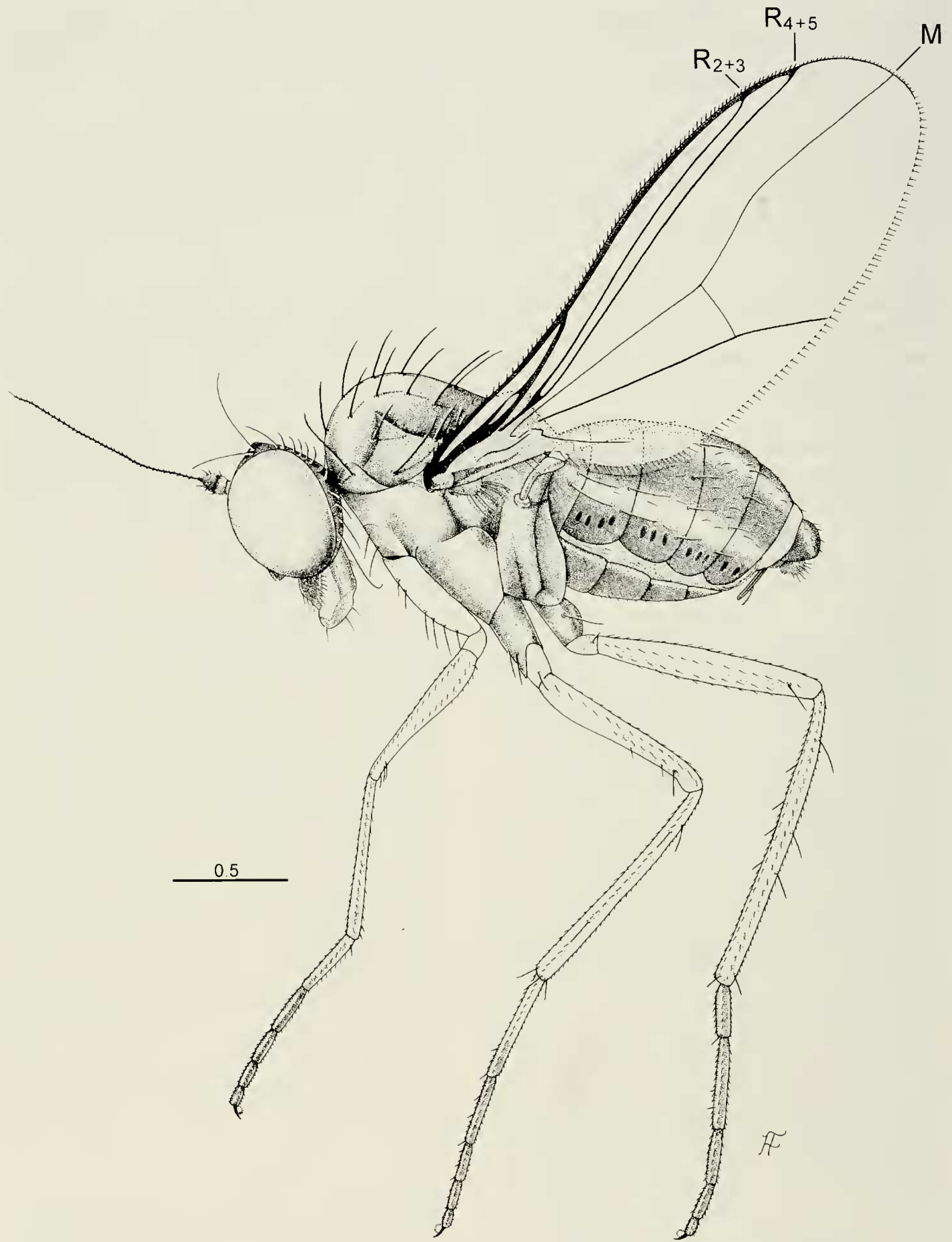


Fig. 1. *Maipomyia insolita*, male habitus.

SYSTEMATIC POSITION OF *MAIPOMYIA*

What are the phylogenetic relationships of *Maipomyia*? Apart from the highly reduced male hypopygium and the anterior preapical setae on femora I and II, the genus appears to be closest to the subfamily Medeterinae. However, the limits of this subfamily are uncertain, and much more basic systematic investigation is needed before any meaningful phylogenetic analysis can be undertaken (also see Bickel 1986). However, the character states of *Maipomyia* are discussed below and related to those of the type genus, *Medetera* Fisher von Waldheim.

I. Characters shared by *Maipomyia* and *Medetera* (not necessarily derived)

1. First flagellomere subrectangular to subovate, with apical arista.
2. Dorsal posteranium concave.
3. Face width subequal in both sexes, and parallel sided or slightly converging ventrally.
4. Posterior mesonotum strongly flattened and slightly depressed.
5. Lateral scutellar setae reduced to tiny setae or absent.
6. Legs usually without strong male secondary sexual characters.
7. Leg I without major setae.
8. Vein M without *bosse alaire*, the flexion and slight wing indentation found in some dolichopodids.
9. Hypopygial foramen left lateral.

II. Characters diagnostic for *Maipomyia*

1. Proepisternum with two setae. Most Medeterinae have a bare proepisternum, except for *Systemus* Loew, which has a single proepisternal seta.
2. Femora II and III each with strong anterior preapical seta. All Medeterinae have the femora bare of anterior preapical setae, a key defining character state for the subfamily. However, anterior femoral preapical setae are widespread in other dolichopodid taxa and their presence is possibly

plesiomorphic with respect to the medeterine groundplan.

3. M distinctly weaker than other veins. In most dolichopodid genera the major longitudinal veins of the wing are more or less subequal in thickness. This weak vein M is probably an autapomorphy for *Maipomyia*.
4. Male abdominal segment 7 hidden and not forming peduncle, but with well separated band-like tergum and rounded sternum (Fig. 2d). In all other Medeterinae, the hypopygial peduncle formed from segment 7 is prolonged, often greatly so, with the tergum and sternum often partially fused. The unfused non-pedunculate condition of segment 7 in *Maipomyia* is plesiomorphic with respect to most Medeterinae.
5. Hypandrium not evident and possibly fused with the epandrium. This is an autapomorphy, as the hypandrium is present in most Dolichopodidae.
6. Surstylus only very short, conforming to curvature of epandrium. This is an autapomorphy, as most Dolichopodidae have arm-like surstyli.
7. Oviscapt (Figs 2b, c) with tergum 8 forming sclerotised lateral bands which abut fused terga 9+10; terga 9+10 forming transverse band, divided medially into hemitergites, but with only short vestiture, no strong setae or acanthophorites present. This oviscapt structure is possibly unique in the family, and is an autapomorphy for the genus. Most Dolichopodidae have terga 9+10 divided into hemitergites, which bear strong setae or acanthophorites.

KEY TO SPECIES OF *MAIPOMYIA*

1. Ac absent; 5 strong dc present; ventralmost postorbital seta greatly prolonged and curved (Fig. 1); wing length < 2.1 mm; hypopygium (Fig. 2a) (Chile) *M. insolita*
- Ac short biseriate; 6 strong dc present; ventralmost postorbital seta not greatly prolonged;

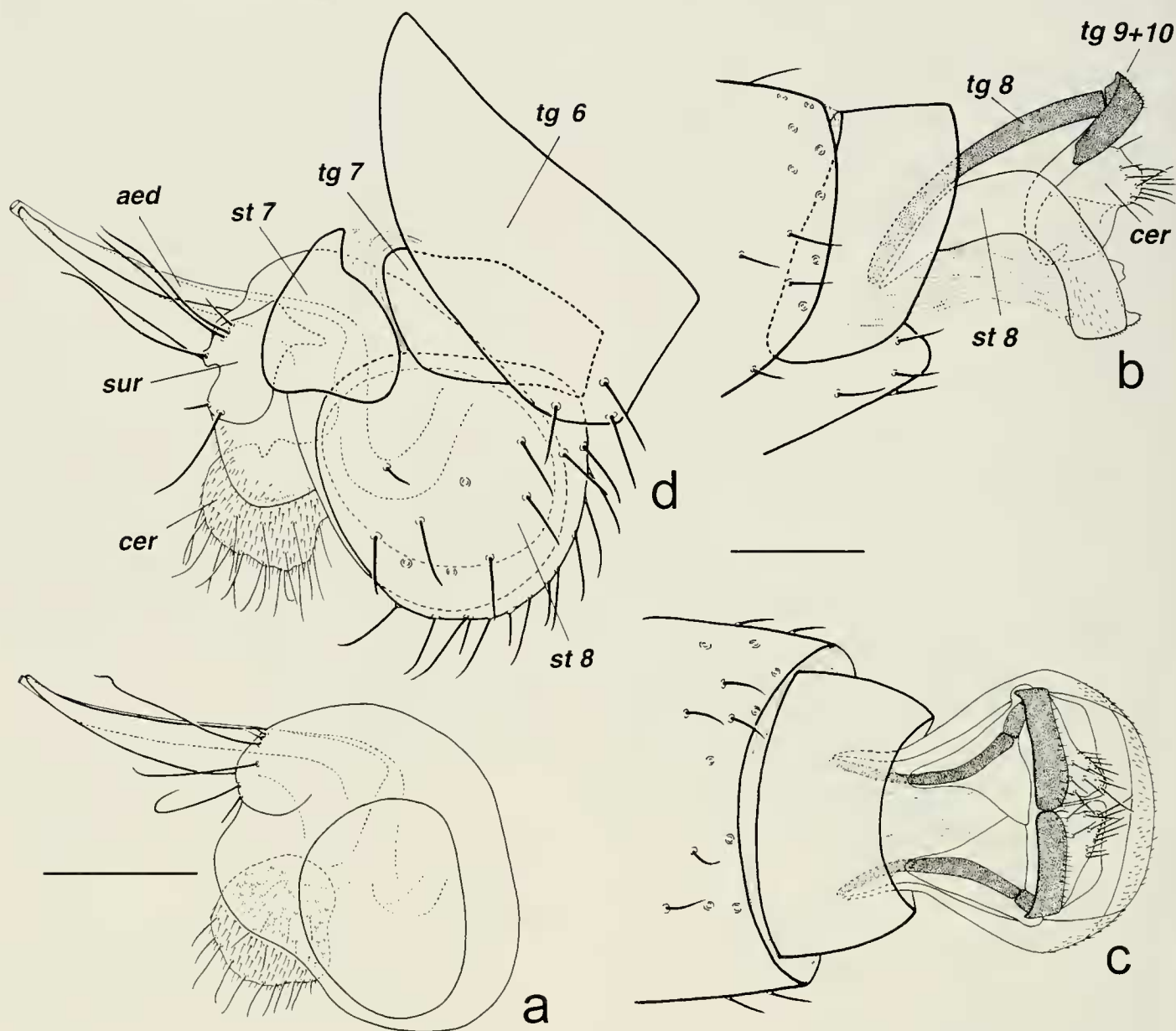


Fig. 2. *Maipomyia insolita*. a, Hypopygium, left lateral. b, Female oviscapt, left lateral. c, Female oviscapt, dorsal. *M. velata*. d, Male postabdomen; left lateral. Legend: aed, aedeagus; cer, cercus; sur, surstylus; tg, tergum; st, sternum. Scale line = 0.1 mm.

wing length > 2.2 mm; hypopygium (Fig. 2d)
(Chile) *M. velata*

***Maipomyia insolita* Bickel, new species**
(Figs. 1, 2a–c)

Type material.—Holotype, ♂, Paratypes, 4 ♂, 8 ♀, CHILE: nr. San José de Maipo, 33°25'S 70°23'W, 2–3.i.1997, 1050 m, cactus/thorn scrub, yellow water traps, D. J. Bickel (Holotype, ♂, paratype ♀, deposited MEUC; 3 ♂, 7 ♀ paratypes deposited USNM).

Additional material.—CHILE: 2 ♂, 4 ♀, PN Rio Clarillo, 33°29'S 70°29'W, 2–3.i.1997, 870 m, dry riverine forest, yellow water traps, D. J. Bickel; 4 ♀, same but

2.i.1997, collected off white adobe walls (AMS).

Description.—Male: 1.8 mm; Wing: 2.0 × 0.8 mm; habitus (Fig. 1).

Head: Dorsal postcranium concave; frons black, covered with grey pruinosity; setae brown with yellowish reflections; strong vertical and ocellar setae present; face narrow and slightly converging ventrally; palp brown, ovate, with short hairs; proboscis brown; scape and pedicel yellowish, but infuscated in some specimens; first flagellomere black, rounded; arista apical, and slightly longer than head height; post-orbital setae white, longer on ventral third, with ventralmost seta long and curved.

Thorax: Mostly black, covered with grey pruinosity; scutellum black basally with a distinct wide yellow rim; posterior mesonotum distinctly flattened and slightly depressed; setae yellowish; ac absent; 5 strong dc present which decrease in size anteriorly; 1 posterior supra-alar seta, 2 postalar setae, 1 postpronotal seta, and 2 notopleural setae; 2 proepisternal setae above coxa I, ventral seta about twice length of dorsal; scutellum with strong median and tiny weak lateral setae; postnotum broad and slightly bulging.

Legs: CI yellow; CII and CIII yellowish with some infuscation; remainder of legs mostly yellow; with distal tarsomeres slightly infuscated; major setae yellow; CI with 6–7 lateral setae; CII with some short distolateral setae; CIII with single strong lateral seta; femora slender; I: 3.0; 2.5; 1.2/ 0.8/ 0.6/ 0.4/ 0.3; leg I without major setae; II: 3.5; 3.5; 1.4/ 0.8/ 0.6/ 0.4/ 0.3; FII with strong anterior preapical seta; TII with ad seta at $\frac{1}{2}$ and $\frac{3}{4}$, pd seta at $\frac{1}{5}$, and apically with anterior, ad and ventral setae; tarsi bare; III: 3.8; 4.0; 0.7/ 1.2/ 0.6/ 0.5/ 0.3; FIII with anterior preapical seta; TIII with some dorsal setae but no major ad or pd setae, and apically with dorsal, av and ventral setae.

Wing: Hyaline and relatively broad; R_{2+3} and R_{4+5} closely parallel and both ending well before wing apex; costa weakened beyond R_{4+5} before ending at apex; vein M with gentle curve beyond m-cu crossvein, distinctly weaker than R_{2+3} and R_{4+5} , and ending at apex; CuAx ratio: 0.8; anal vein weak; halter yellow; lower calypter yellow with fan of yellow setae.

Abdomen: Terga brown with some metallic green reflections, and covered with grey pruinosity; terga 1–5 with long yellowish marginal setae, longer laterally; terga 2–5 each with 3–4 lateral abdominal plaques; abdominal sterna 2–5 brown; tergum 6 yellow, contrasting with preceding dark brown segments; segment 7 hidden and not forming peduncle, with band-like tergum and rounded sternum; sternum 8 dark brown

and covering foramen; hypopygium (Fig. 2a) dark brown with yellowish cercus; epandrium ovate, with large left lateral foramen; hypandrium not evident; aedeagus with lateral projections as figured; surstylus very short and with some long setae; cercus short and rounded, with short setae.

Female: Similar except as noted: no strong secondary sexual differences evident; podomere ratios similar; ventralmost postorbital seta also long and curved; oviscapt (Figs. 2b, c) with tergum 8 forming well-sclerotised lateral bands which abut fused terga 9+10; sternum 8 forming rounded ventral band; terga 9+10 forming transverse band, divided medially into hemitergites, but with only short hairs, no strong setae or acanthophorites present.

Remarks.—The specific epithet, *insolita*, is from the Latin for “isolated”, referring to the fact that *Maipomyia* is morphologically distinct or isolated from other dolichopodid genera. For further notes, see “Remarks” under the generic discussion.

Maipomyia velata Bickel, new species

(Fig. 2d)

Type material.—Holotype, ♂, Paratypes, 2 ♀, CHILE: PN Rio Clarillo, 33°29'S 70°29'W, 2.i.1997, 870 m, dry riverine forest, collected off white adobe walls D. J. Bickel; Paratype, ♂, same but 2–3.i.1997, in yellow water traps (Holotype, ♂, Paratype ♀, deposited MEUC; ♂, ♀ paratypes deposited USNM).

Additional material.—CHILE: 2 ♂, 2 ♀, Santiago Prov., Quebrada de la Plata, 33°30'S 70°55'W, nr Malpú, 2.ii.1966, 510 m, malaise trap, M.E. Irwin (CAS).

Description.—Male: 2.2 mm; Wing: 2.3 × 0.8 mm; similar to *M. insolita* except as noted:

Head: Without long ventralmost postorbital seta.

Thorax: Setae yellow; ac biseriate, with 5–6 short pairs; 6 strong dc present which decrease in size anteriorly.

Legs: Color similar but coxae II and III

more yellow; setation and podomere ratios similar.

Abdomen: Color similar, except segment 6 brown; hypopygium (Fig. 2d); surstylus with longer setae, and with lobate dorsal projection; cercus also short and rounded, with somewhat longer setae.

Female: Similar to male.

Remarks.—The specific epithet, *velata*, is from the Latin for “hidden”, referring to the fact I did not initially recognise it as a species distinct from *M. insolita*. For further notes, see “Remarks” under the generic discussion.

ACKNOWLEDGMENTS

H. Finlay drew the figures. I thank K. Ribardo (CAS) for the loan of specimens.

CONAF, Corporación Nacional Forestal, Puerto Montt, gave permission to collect in reserves under their administration. R. Hurley and S. Brooks provided helpful comments on a draft manuscript of this paper.

LITERATURE CITED

- Bickel, D. J. 1986. *Thrypticus* and an allied new genus, *Corindia*, from Australia (Diptera: Dolichopodidae). *Records of the Australian Museum* 38: 135–151.
- Parent, O. 1932. Espèces nouvelles du genre *Sympycnus* Lw. provenant de l'Amérique du sud et conservée au Muséum de Dresde. *Encyclopédie Entomologique (B, II) Diptera*, 6: 41–70.
- Van Duzee, M. C. 1930. Dolichopodidae, Part 5(1): 1–92. *In* *Diptera of Patagonia and South Chile*. British Museum (Natural History), London.